



Public Procurement for the Promotion of R&D and Innovation in ICT

L. Nyiri, D. Osimo, R. Özcivelek, C. Centeno, M. Cabrera



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L. Nyiri – D. Osimo - R. Özcivelek – C. Centeno – M. Cabrera

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Preface

In November 2005, DG INFSO (Unit C2 which deals with *Strategy for ICT Research and Development*) asked the ICT Unit at IPTS¹ to carry out an exploratory study in order to develop an understanding of the current situation in the EU25, compared to the rest of the world, regarding public technology procurement (PTP) practices in the ICT applications and services, and its impact on research and innovation in ICT.

Compared to the US and major Asian countries, like Japan and Korea, PTP in Europe is assumed to be under utilized as a means of boosting research and innovation in ICT. With increasing global competition, and ongoing fragmentation of national public procurement policy objectives and practices, the fact that little attention is given to PTP policy across EU Member States seems to be a major European weakness.

The purpose of the study was to support the identification of possible policy actions and to contribute to the elaboration of a discussion paper to be prepared by the Working Group (WG) on “Public procurement in support of ICT research and innovation” set up by the National IST Directors’ Forum. The study combines desk research with a series of interviews with experts from Member States. The resulting WG discussion paper was presented at the high level event ‘ICT RTD ’06 on European ICT Research and Innovation Policy’ on 22-23 March, 2006 in Vienna, Austria.

This report, entitled *‘Public procurement for the promotion of R&D and innovation in ICT’*, provides the results of the study. It provides an overview on the potential role of public procurement in innovation and ICT R&D, the EU regulatory and policy context, the size of the (ICT) public procurement market, the major factors influencing PTP, and finally, current practice in the Member States, as identified in the interviews. The report then summarizes some policy-relevant conclusions, which aim to contribute to the better understanding of the subject, the formulation of possible policy actions and the definition of further research activities.

¹ IPTS (the Institute for Prospective Technological Studies), based in Seville, Spain is one of 7 research institutes that make up the Joint Research Centre of the European Commission.

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EXECUTIVE SUMMARY

R&D was considered by the Barcelona European Council (March 2002) to be a key instrument for innovation, growth and employment. Acknowledging that the EU is lagging behind the US and Japan on R&D expenditure as a share of GDP, the Council set the target of increasing the average research investment level from 1.97% to 3% of GDP by 2010, of which two thirds should be funded by the private sector.

Furthermore, recognising the significant role that ICT has in stimulating growth and employment, the 2005 “i2010” policy set a number of objectives to stimulate research into ICT.

In order to achieve these objectives, the need to identify which policies could stimulate R&D investment has become crucial.

The study carried out by IPTS has explored the potential Public Technology Procurement can have in stimulating ICT R&D and innovation.

Public Technology Procurement (PTP) happens “*when a government agency places an order to another organisation for a product (or service) that does not yet exist*”, and where new R&D and/or innovation are needed before delivery. [EC (2003)]

This study aimed to assess the status of public technology procurement in the EU member states in terms of size, evolution, drivers and barriers. It is exploratory and cannot claim to be conclusive. However it has clarified several important points which are worth considering in the policy-formulation process.

The public sector has the potential to positively influence innovation and R&D through public procurement. It can provide a sufficient and stable demand for innovative products, thereby reducing the risks associated with innovation for suppliers. It may also act as the main or first user of new products or services. Thus, public procurement can be most influential in the early stages of the life-cycle of a product, promoting emerging industries.

As public procurement of products and services represents more than 16% of GDP in the EU15, it has significant economic leverage. In the field of ICT specifically, public expenditure is significant in both relative (about 20% of the IT market) and absolute terms (around €60 billion in 2004²), and it is expected to grow as a result of current political objectives to increase efficiency and quality of public services, and the greater demand forecasted for several application areas such as eGovernment, health and education, transport/utilities and traffic safety.

Research shows that there is no comparative data available on how many of these ICT purchases are innovative. However, desk research and interviews with experts provides indications that can be used to provide a (partial) assessment of the situation.

A World Economic Forum survey (2002) shows Asian countries and the US ahead of Europe in the innovation orientation of public procurement. Countries such as the US and Korea have more explicit policies to orientate public demand towards promoting innovation.

Interviewed national experts unanimously consider the size of PTP as **marginal** in total public procurement. The main purpose of ICT procurement in the public sector is currently the maintenance of existing products and services. Where innovative products are procured, they are often improvements and adaptations of existing products, and require little research effort. There are countries and sectoral niches which are more innovative, but it can be concluded that public procurement is not really realising its innovation potential.

² Source: EITO (2005)

The European Commission has devoted increasing attention to the possibility of stimulating innovation through public procurement, within the limits of the international dispositions of the Government Procurement Agreement within the WTO. In 2004, the **new procurement Directives** (2004/17 and 2004/18) introduced special provisions which could facilitate innovation, such as the possibility to use competitive dialogue and functional specification in the procurement process. In 2006, a handbook on Procurement and Innovation will be published.

At the national level, while procurement is undergoing important modernisation across Europe, very **few European countries** (e.g. the UK, and the Netherlands) have specific programmes or focus on the use of public procurement for the promotion of innovation. In these countries, one can observe interesting policies such as the co-ordination between procurement and innovation policies throughout general government, including health-care and education.

These policies generally aim to **raise awareness** of the opportunities brought by PTP. They deploy soft measures such as awareness raising, training in ICT and procurement skills, and exchange of good practice. As the implementation of policies is recent, there are, as yet, no measurable results nor can concrete examples of purchases stimulated by these policies be provided. Targets, however, are now being set (as a % of public procurement to be focused on products and services not available on the market). Experts report that greater awareness and communication is still needed even in those countries where specific procurement policies exist, particularly as regards the means by which new dispositions in procurement regulation could enable innovation.

In spite of increasing **aggregation** and co-ordination among actors through, for example, central public procurement agencies, these trends focus mainly on ICT commodity goods and services where joint procurement and economies of scale are easier to achieve. Procurement remains, thus, **very fragmented**, not only at national level within and among different institutions and sectors (administration, health, education, defence, etc) but also at regional and local level, where a significant share of procurement is carried out. Aggregation at EU level, although perceived as an opportunity for innovation, remains limited to EU initiatives such as Galileo or GEANT.

E-government and **e-procurement** initiatives appear to be instrumental for improving ICT procurement, by harmonising purchases, launching co-ordination initiatives, setting standards and building skills. However, the main focus of e-procurement is to produce cost savings. It targets commodity goods and services, and therefore does not stimulate the purchase of innovative goods and services.

Dialogue with the suppliers is fundamental to improve the quality and innovation of the purchases. Some kind of interaction with the ICT industry has been established across Europe, at least at the strategic level. At the operational level, new instruments such as **competitive dialogue** are currently being introduced by the new procurement directives in the Member States. As this instrument has only been used to a limited degree, it is too early to assess its impact on innovation and research.

In order to identify possible policy initiatives, an analysis of the **factors** that enable PTP is useful:

- The explicit co-ordination between procurement and innovation policies and actors;
- The dialogue between buyer and supplier at different stages of the procurement process;
- The aggregation of demand to provide a critical mass to justify private investment in R&D;
- The incorporation of Life Cost Assessment in the evaluation of proposals;
- The buyer's skills on ICT public procurement;
- Ensuring participation of small and medium-sized enterprises (SMEs) which play a key role in product/service innovation;

- Risk sharing between suppliers and purchasers through contractual provisions; and
- Allowing Intellectual Property Rights (IPR) to remain with the supplier.

Specific barriers for PTP identified by the public sector are: lack of awareness of the legal dispositions for innovative procurement, lack of political commitment, and risk aversion in the public sector.

Finally, during the research, a **potential parallel was identified with green procurement** policy objectives and processes that have taken place at the EU and national level, including regulation, communications, awareness building and “learning/training by doing” actions such as the green procurement handbook. As this is a more mature policy area, learning from practices in this area could provide useful insights for PTP.

In summary two main observations have to be made:

- The policy relevance of public procurement in promoting innovation and R&D has been recognized by the European Commission and most of the EU Member States. The policy dialogue has been intensified, but we are at the early phases of the warm-up process. This is the main reason for the lack of statistical data, and the very few policy actions and experiences.
- While most public procurement usually targets off-the-shelf products and services without requesting any additional R&D, in the future accelerated technical change and the growing social demand for improved quality in public services will result in more and more innovative public purchasing demands. This will invite additional R&D efforts by the suppliers. In such cases “the best value for money” will largely be determined by the extent to which really new innovations become part of the process. This expectation strengthens further the importance of public procurement as a demand-side innovation measure.

The research has clearly shown that existing evidence is not sufficient to provide a conclusive picture of the role of public procurement in promoting innovation and ICT R&D. In particular, the analysis of the examples of innovative procurement practices suggested by the experts shows that these actually represent adaptations or improvements of existing solutions (incremental innovation) or even non-technological innovation characterised by organisational and management changes, rather than early-stage innovation of emerging technologies. The interview process did not allow us to identify the degree of R&D involved in these cases. An analysis is therefore recommended of selected case studies where public procurement has stimulated innovation and R&D, in order to validate the preliminary conclusions developed in this study.

1. INTRODUCTION

On 17 December 2005, the European Council noted, that “*the world economy is experiencing a period of rapid and significant economic change and agrees that Europe needs economic reforms, social modernisation and sustainable environmental policies to safeguard its values and respond effectively to the challenges and opportunities of globalisation and demographic change.*” The European Council also underlined “*the importance of innovation, information and communication technology, research and human capital, in particular with respect to SMEs, for achieving higher employment, productivity and sustainable growth across the European Union, in the context of sound macroeconomic policies*”. [European Council (2005)]

In 2005, the European Commission also adopted the initiative “*i2010: European Information Society 2010*” in order to foster growth and jobs in the information society and media industries [EC (2005e)].

i2010 is a comprehensive strategy for modernising and deploying all EU policy instruments, including regulatory instruments and research and partnerships with industry, to encourage the development of the digital economy. The initiative gives high priority to the creation of an open and competitive single market for information society and media services within the EU, and to the increase of European spending on research into information and communication technologies (ICT) by 80% by 2010.

The role of the public sector in achieving these policy targets has been widely discussed both at European and member state level. All measures in the hands of public organisations (governments and the Commission of the European Union) are currently being reviewed. Public procurement is considered to be an important tool with considerable potential for both improving the quality of government services and promoting R&D spending in Europe.

The lack of comprehensive study of the European ICT public procurement market may make it difficult to develop appropriate policies on promoting innovation and R&D. Preliminary research on the subject is needed to support policy formulation and highlight options for action.

After presenting the challenge (Chapter 2), the relevance of public procurement as a tool to meet the challenge is discussed (Chapter 3). Chapter 4 gives a brief introduction to the European regulatory and policy framework. Chapter 5 aims to provide a quantitative analysis of the existing procurement market, its ICT and innovative segments. Chapter 6 discusses all the factors which may enable or hinder the development of innovative public procurement. Chapter 7 also summarises the approaches, policy actions and experiences at member state level (mostly based on interviews with relevant experts). Finally, some conclusions are drawn in Chapter 8.

1.1. RESEARCH QUESTIONS

The research addressed the following questions:

- **How much money is spent?** How can the existing statistical and monitoring systems in relation to public procurement measure innovative public procurement, particularly public technology procurement? To what extent is public spending used today in the EU-25 Member States to procure innovative versus traditional/off-the-shelf ICT solutions? Can the direct impact of such public procurement activities on R&D spending be identified?
- **How is the money used?** What is the breakdown of ICT-related public procurement among different application areas, in particular eGovernment and eHealth? Which areas will have high growth potential in the coming years and which could benefit from a multi-country approach?

- **What is the process?** What are the key differences in objectives, rules and procedures governing innovative and traditional public procurement? Is there any good practice in this respect among the Member States?

1.2. DEFINITIONS AND SCOPE

The scope of the research carried out by IPTS was limited to a small, but important segment of the public procurement business - i.e. what is called, for the purposes of this study, Public Technology Procurement (PTP).

Public Technology Procurement happens “*when a government agency places an order to another organisation for a product (or service) that does not yet exist. This means that R&D and innovation have to take place before delivery. The procurer specifies the functions of a product or system but not the product as such*”. [EC (2003)] The scope of the report concentrates on procurement activities which promote innovation in the European ICT industry by the creation of new scientific and technological knowledge (research & development).

Throughout this document, **technological innovation** “*is related to a process connecting knowledge and technology with the exploitation of market opportunities for new or improved products, services and business processes compared to those already available on the common market and encompassing a certain degree of risk.*” [EC (2005g)]

ICT is defined as a combination of manufacturing and service industries that captures, transmits and displays data and information electronically.³ The study initially considered using a broader approach to include the audiovisual and media sectors as well. This report, however, uses the narrower definition of ICT described above, due to the lack of available aggregate and comparable statistical data, and the specific regulatory context of audiovisual and media procurement.

E-procurement in itself is not within the scope of this study, as the scope of the research is the purchase of ICT, not ICT as a means of carrying out procurement.

Specific public funding schemes like research funds were also out of the scope, since they are not regulated by the public procurement laws and Directives. This research focussed on Europe for primary data collection and interviews, but secondary data and sources were used from non-European countries, in particular from the major competitors (USA, Japan and Korea,) were also taken into consideration. Last but not least, all domains of public activity, such as security, defence, transport, health, administration and environment were considered as the subject of public procurement.

1.3. METHODOLOGY

Given the time available (from mid-November 2005 to mid-February 2006), the research aimed to make an introductory analysis of the specified subjects and research questions.

The project outcomes, summarized in this report, relied on the following tools and methods:

³ **Manufacturing:** 3000 – Office, accounting and computing machinery; 3130 – Insulated wire and cable; 3210 – Electronic valves and tubes and other electronic components; 3220 – Television and radio transmitters and apparatus for line telephony and line telegraphy; 3230 – Television and radio receivers, sound or video recording or reproducing apparatus and associated goods; 3312 – Instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process equipment; 3313 – Industrial process equipment. **Services:** 5150 – Wholesaling of machinery, equipment and supplies (if possible only the wholesaling of ICT goods should be included); 7123 – Renting of office machinery and equipment (including computers); 6420 – Telecommunications; 72 – Computer and related activities. (Source: Measuring the information economy 2002, OECD, Paris, 2002)

- {A}** Desk research - Collection of statistical data, appropriate regulations, institutional framework and cases for further study as success or failure stories. As statistical data on procurement on EU25 is in short supply, available data on EU15 is used.
- {B}** Survey – interviews with industry representatives of the European Technology Platforms.

Interviews were conducted with the representatives of three out of six existing European Technology Platforms (NEM⁴, ENIAC⁵ and ARTEMIS⁶). In the interviews, a special focus was given to identifying those ICT application areas which could have fast growing public demand in the coming years, particularly those which could benefit from PTP. (See the Interview Questionnaire in Annex 1)

- {C}** Survey – interviews with public procurement experts from the EU Member States

Experts from eight Member States (the UK, France, Germany, the Netherlands, Sweden, Belgium, Finland and Italy) were interviewed. As recommended by the national IST directors, the selected experts were high-level officers in a) central public purchasing institutions, or b) other procurement institutions (involved in public procurement as training, or coordinating organizations, but not running procurement processes), or c) ICT central agencies. The interviewees therefore had a varied background and approach. While this diminished the comparability of the data and information received, it also enriched the picture and provided a better understanding of the different policy actors and their related perspectives. The interviews were made by telephone during the period 10 January to 10 February, 2006. The outcome of the interviews covered both general and innovation-specific aspects of the subject, and more focus was given to qualitative than to quantitative elements (see the Interview Questionnaire in Annex 2).

⁴ NEM – Networked and Electronic Media

⁵ ENIAC – European Nanoelectronics Initiative Advisory Council

⁶ ARTEMIS – The European Technology Platform for Embedded Intelligence and Systems

2. THE CHALLENGE

Innovation, in particular the creation of new scientific knowledge (research) in the ICT fields may strongly determine how the transition from a post-industrialised to a knowledge/learning society takes place. Governments, international organisations and industrial associations are eager to find appropriate tools and measures to promote innovation and improve the competitive position of regions, countries and firms. This growing political and economic attention takes place in a globally fast changing environment for innovation, which pushes policy makers to not only consider traditional tools and measures, but also look for new ones.

R&D was considered by the March 2002 Barcelona European Council as a key instrument for innovation, growth and employment. Acknowledging that the EU is lagging behind the US and Japan on R&D expenditure as a share of GDP, the Council set the target for increasing the average research investment level from 1.97% to 3% of GDP by 2010, of which two thirds should be funded by the private sector.

Generally, Europe is investing less in research than the US and Japan, especially in terms of business expenditure. (See Table 1)

Table 1: Total and business R&D expenditure as a share of GDP in the EU, the US and Japan in 2003

Regions/countries	GERD ⁷ /GDP (%)	BERD ⁸ /GDP (%)
EU15	1,97	1,27
US	2,59	1,79
Japan	3,15	2,36

Source: EUROSTAT

Furthermore, recognising the significant role that ICT has in stimulating growth and employment, the 2005 “i2010” policy has set a number of objectives to stimulate research on ICT.

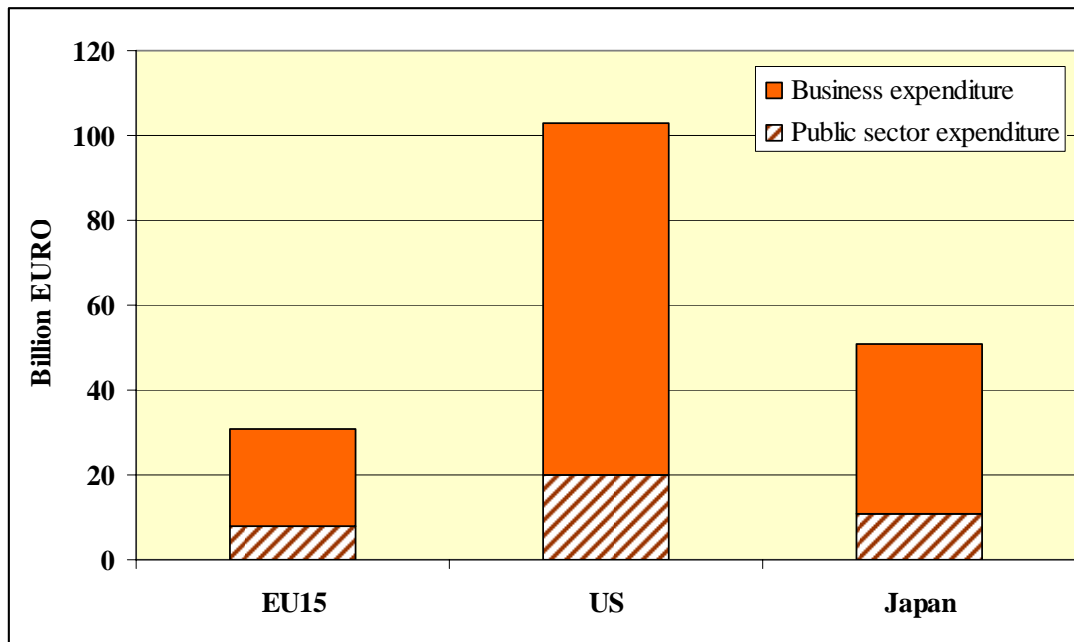
In terms of expenditure on ICT research, the EU is lagging behind its main competitors, both in absolute and relative terms. (See Figure 1) In 2004, the overall value of business expenditure in the EU on ICT research was a quarter of US expenditure and half Japanese expenditure.⁹ The share of ICT R&D in total R&D spending was around 35% both in the US and in Japan, whilst it was only 18% in the EU-15. [EC (2005e)]

⁷ GERD – Gross Expenditure on R&D

⁸ BERD – Business Expenditure on R&D

⁹ BERD in 2004 was €23 billion, in the EU-15, €83 billion in the US and €40 billion in Japan [EC (2005e)]

Figure 1. R&D expenditure for ICT by sectors in the EU, the US and Japan in 2004



Source: EC (2005e)

The biggest gap between Europe and her major competitors (the US and Japan) lies in private investment in ICT research and development.

The review of R&D output indicators does not show a different picture. In the field of ICT, the available set of data on scientific publication shows clear US dominance in both the activity (the number of publications) and the impact (citation rate). However, a number of smaller European countries can be found in the top ten as measured by citation impact. [EC, 2005]

Since the ICT sector is highly knowledge intensive and its impact on economic and social development is far bigger than its share in GDP production, low investment by both public and private actors in R&D for ICT is recognized as a key challenge for Europe in implementing the renewed Community Lisbon Programme. [EC (2005i)]

3. ADDRESSING THE CHALLENGE

The growing demand for strong public involvement in the promotion of innovation is justified by the presence of market failure, which occurs when the market alone does not give rise to an economically efficient outcome. Private firms may be reluctant to innovate when they are not sure if they will fully enjoy the benefits of their innovation, or they are not aware of the positive spill-over effects. Market failure is also caused by inefficient dissemination of information, lack of capital, inappropriate coordination and mismatches in the labour market. All business actors are affected by these factors, but SMEs - particularly the new ones - are much more sensitive than large firms. [EC (2005f)]

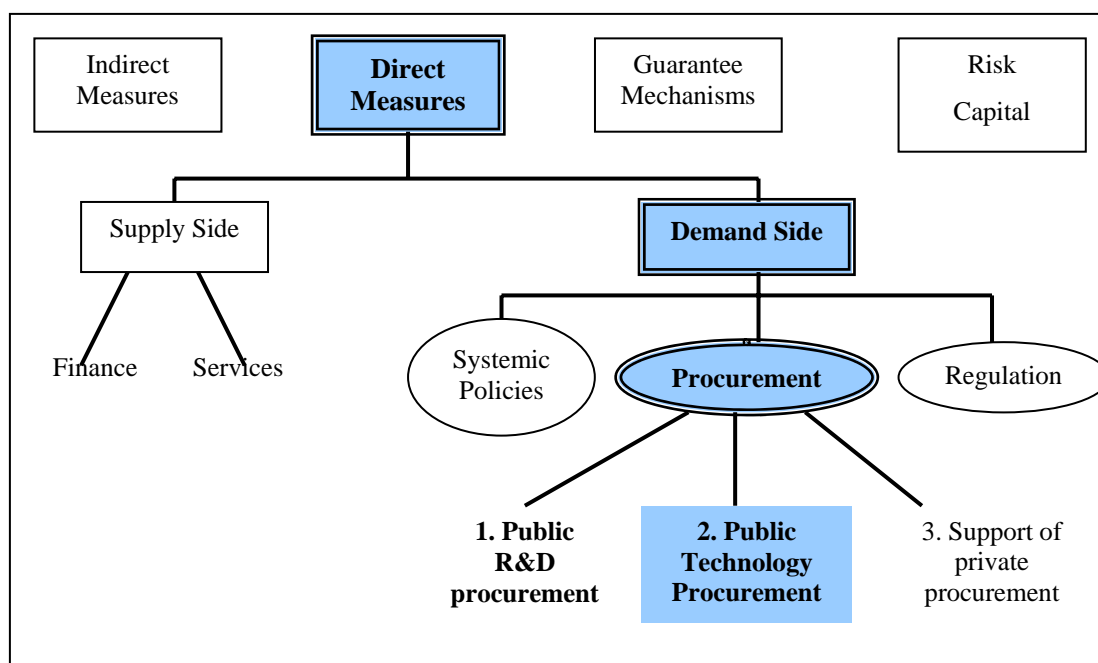
The public sector, particularly the national governments and the EU, puts more and more emphasis on facilitating and promoting innovation in order to improve the competitive position of firms and regions. A broad range of measures and tools are applied, and public procurement is considered to be one of many options.

3.1. POLICY MEASURES IN PROMOTION OF INNOVATION AND R&D

According to a European Commission report [EC(2003)] the policy measures for promoting R&D and innovation may be broken into the following subgroups: (a) indirect (fiscal) and (b) direct measures, (c) guarantee mechanisms and (d) risk capital activities.

The direct measures can be subdivided into supply and demand side considerations. (See Figure 2)

Figure 2. Innovation policy measures applied by governments and other public authorities



Source: EC (2003)

Examples of supply-side measures are: financial measures, like support for public sector research, training and mobility, grants for industrial R&D activities; or services provided by public authorities and other organisations (brokerage or networking supports etc.). [Source: EC (2003)]

On the other hand, the demand side of innovation promotion consists of regulation, systemic policies, such as training programmes or and awareness building) and the support of private demand (R&D procurement, public technology procurement and support of private procurement). (See Figure 2)

Public policies are traditionally more focused on applying supply-side measures, but during the past years, demand-side innovation promotion has also been given growing attention.

3.2. THE ROLE OF PUBLIC PROCUREMENT IN PROMOTION OF INNOVATION AND R&D

Demanding customers are usually considered to be one of the most important drivers of innovation. Business investment into research and development is strongly influenced by the market, and particularly by the level of performance demanded by customers.

The public sector, due to its large purchasing power, could have an important impact as a demanding customer. Procurement of products and services by government offices/agencies represents a large share of GDP (more than 16% in Europe) [EC (2004)]. Governments' policies and concrete decisions on procurement can determine prices, economies of scale (quantities) and standards, which may affect innovation both positively and negatively. Thus, public procurement is one of the public activities which can tackle the market failure challenge that firms are facing.

For example, the public sector, as the main or only user of particular goods or services, can bear the high entry costs, send signals to other (private) actors on the market (building awareness), contribute to speeding up technology diffusion and increase competition. A medium term public sector procurement strategy can contribute to making market forecasts of technological evolution more precise, which significantly reduces the risks run by private firms and helps to create the critical mass of resources necessary for successful innovation. These strategies may directly affect the decisions made by potential suppliers and decrease the risk of their investments by guaranteeing the market.

While the link between public procurement and the national system of innovation is evident, it should be highlighted that concrete mechanisms should be designed in full compliance with the relevant procurement and State Aid regulations. But on the other hand, the scope of the various ways in which public procurement policy can contribute to the delivery of the Lisbon targets should also be taken into account.

Two major types of public procurement are directly linked to the promotion of R&D:

- *Public Technology Procurement*, which targets products or services not available on the market. Suppliers have to carry out research, technological development and or innovation in order to satisfy the procurer's demand, and the public by financing part of the R&D decreases the uncertainty for the supplier thus encouraging his or her own spending;
- *Direct public R&D procurement*, which aims to buy R&D in order to support the decisions and other activities of governments and public authorities (usually support for policy, regulation and evaluation/assessment).

This paper focuses only on the first group of such activities.

Story #1: The US semiconductor industry's development in the late 60s and early 70s

In the 60s, when the technological options were far ahead of civilian applications in the semiconductor business, the US defence sector represented the only customer for the American semiconductor industry. With its high-level technological requirements, the public sector created a strong demand for innovation in order to satisfy the specifications imposed by military applications. Department of Defence's (DOD) willingness in the 1960s to pay almost any price for compact, lightweight electronics for its missile programmes stimulated the infant semiconductor industry. This early and cost-intensive purchasing helped companies pioneering the technology to move down the learning curve, reducing their costs to a point where commercial customers could afford the new chips. The American defence programme played a significant role in the development of the semiconductor industry in the 60s. The technological capability of the procurer (user), demand aggregation and the size of the order(s) (critical mass effects) are considered to be major factors for success. In Europe, the lack of such demanding and smart customer(s) contributed to losses in innovation (and later, on the market). [Nelson (1982)]

Today, defence procurement plays a role in advancing knowledge systems, and power technologies. The DOD was also one of the earliest organisations to find applications for nanotechnology. [PREST (2004)]

In the process of PTP, the procurer should specify the functions of the product/service, but not the product itself. It should have a direct impact on R&D or it should stimulate innovative procurement among private firms as in the supply chain, which creates "*a dynamic knock-on effect throughout the European economy*". [EC (2005d)]

This could be done by specifying functional requirements in a way that leaves firms the widest scope to propose innovative solutions, rather than demanding a specific technical standard. This approach would give firms strong incentives to maximise the efficiency and performance of the products and services they offer, particularly where public authorities act as launching customers, providing lead markets for new technologies. Markets where public authorities have a strong potential to stimulate demand for new technologies include transport, energy, defence and security, environment, health-care and education.

Story #2: The Canadian case for public authorities as the first users of innovation

For Canada, thanks to the availability of specific statistics on research and innovation, there is some quantitative evidence on the important role of the public sector as a first user of innovation. According to Dalpé et al. (1994), who studied innovations between 1945 and 1978, 25% of innovations are used first by the public sector, as are 13% of patents and 8% of manufactured products. The main innovative sectors are "*hospitals, electrical energy, defence, the central government, railway transport and telephone systems*".

The role of public procurement in innovation is most influential in the **early stages** of the life-cycle of a product, and in promoting emerging industries. During this period the products are in the standardisation phase, so industries are much more open to client-based consultation, than they are later, when the market and the product have been introduced and widely sold.

The public market, intentionally or not, contributes to technological development, when it becomes the **first buyer** of an outcome of innovation. The first buyer has a strategic role in the

innovation process. It takes on the risk of the first order and part of the costs of fine-tuning the product or service.

This role may become even more important in industries where the public sector is the only or the dominant customer (such as defence), i.e. where governments are in a monopsonistic position. In such cases governments play a key role in determining the structure of these industries by the quantity they purchase and by their technological requirements for the goods. If the product or service they require is not available on the market, they may encourage suppliers to innovate and develop new technologies, knowledge and products.

To run a PTP process successfully requires specific skills and competences, such as a good understanding of the given supplying market, a much better defined and longer term strategy on public needs, including a better definition of sectoral demands. There is also a need to possess a good knowledge of the drivers of and impacts on the spill-over effects. If the procurer lacks the necessary knowledge of the market, he cannot understand what the market and/or technologies can offer now and in the future, and he is not in a position to learn from early feedback from the potential suppliers.

3.3. DRIVERS OF PUBLIC TECHNOLOGY PROCUREMENT

The EU will, over the next decade, undergo a number of social and economic transitions which could stimulate a growing public demand for innovative, unique ICT-driven solutions.

The fast-growing ageing population and the general social need for improving the overall quality of public services are the main drivers of the growing demand for ICT-based public services and applications. The keywords of national governments' reform programmes are modernisation, simplification, efficiency and flexibility. All are closely linked to the wider and deeper application of ICTs.

Interviewed industry representatives (from the European Technology Platforms) shared the view that, in the medium term, the public sector will probably be one of the major purchasers of new technologies and applications based on technologies they focus on developing. Areas like services for the ageing population, health-care, security, transport & mobility safety and management, new learning opportunities and interoperable networks have been the most frequently mentioned. These areas are seen as having the greatest potential for growth, though no estimate has been made as yet on the future size or growth rate of this market.

While most public procurement usually targets existing products and services without requesting any additional R&D, in the future rapid technical change and the growing social demand for improved quality in public services will result in more and more public purchasing demands, which will invite additional R&D efforts by the suppliers. In such cases "the best value for money" will largely be determined by the extent to which really new innovations become part of the process.

Therefore, the rationale for PTP is not only based on the positive contribution it could make to innovation and the competitiveness of the European economy, but it is also closely related to the general challenges Europe will have to face over the next few decades.

4. POLICY AND REGULATORY FRAMEWORK OF PUBLIC PROCUREMENT

The policy debate on the possible means of promoting innovation through public procurement, as a demand side measure, has intensified during the past years in many Member States and the European Commission. A number of recent EC initiatives have contributed to this debate.

A recent EU communication on *“Implementing the Community Lisbon Programme: More Research and Innovation - Investing for Growth and Employment: A Common Approach”*, [EC (2005f)] underlines the necessity of a predictable and favourable regulatory environment to allow the transfer of new ideas to the market and recommends using public procurement as a tool to foster research and innovation. It is noted that *“New tools are needed to support the necessary changes. In the field of environment, this was done with a ‘Handbook on green public procurement’ in 2004. The Commission will raise awareness of the benefits of re-orienting public procurement towards stimulating research and innovation and the scope for this under Community public procurement law. This will take the form of a Handbook on public procurement and research and innovation”*.

The Expert Group report on *“Public Procurement for Research and Innovation: Developing procurement practices favourable to R&D and innovation”* [EC (2005d)] published by DG RTD analyses the EU legal framework for procurement in relation to innovation and focuses on the options for good practice provided by the existing rules and regulations. These clarifications of the legal background identify possibilities for the uptake of more innovation-orientated public procurement.

A recent report of an independent Expert Group, chaired by Esko Aho, has highlighted the importance of using *“public procurement to drive demand for innovative goods, while at the same time improving the level of public services.”* The report recognises the actions taken by the European Commission, but sees them as *“necessary first steps. The real challenge is to apply these concepts in key areas of public purchasing and at a European level to explore ways of aggregating and coordinating demand through common standards, regulations and joint procurement.”* [Aho (2006)]

The potential for policies on public procurement is not to be underestimated, as can be illustrated by the case of *“green procurement”* (see Story 3).

Story #3: The case of “green procurement” regulation in Europe

The European Commission has made significant efforts during the past decade to identify options for using public procurement as a measure for environmental policies. Several interpretative communications have been launched for facilitating public and professional discussions on issues like *the possibilities for integrating environmental considerations into public procurement*. In 2004 the Commission also published a handbook on environmental (“green”) public procurement, which had impact on the Member States practices. Recent legal packages include provisions specifically intended to deal with environmental and employment protection [Kunzlik (2005)]

These policy initiatives highlight, at Commission level, the strong recognition that public procurement is not a static element of public policies. The economic, social and political environment has a significant effect on it. The adjustment of actual practice, regulation and procurement policy to this environment is an important element of effective governance (see the US experience in Story 4).

Story #4: Adjustment of the US defence procurement approach to the post cold war environment

The U.S. procurement policy for defence was reaffirmed in May 2001 in a memorandum from the Under Secretary of Defence for Acquisition and Technology in which he stated that:

“In today's environment of reduced defence spending and fewer new program starts, it is short-sighted to require contractor investment in defence research and development contracts. Instead, we should permit contractors to earn a reasonable return on these contracts in exchange for good performance”.

This represents a fundamental difference in funding practice to that used by most major European governments and can be regarded as an important source of competitive advantage for U.S. defence contractors in international markets [PREST (2004)].

When civilian and defence technologies are increasingly interlinked, innovative capacities of companies could be improved effectively through defence procurement. The adaptability of public funding practice to the global market situation is therefore an extremely important element for sharing the high risks of business R&D.

Although it is not part of the public procurement issue, state aid regulation should also be mentioned in any discussion of the policy and regulatory framework. Since the target of public technology procurement is not an off-the-shelf product/service but requires R&D and innovation, compliance with state aid rules needs to be ensured. In parallel with ongoing political dialogue and studies on public procurement, the Commission has launched a public consultation on measures to focus state aid more effectively on innovation. The consultation is expected to include additional provisions authorising state aid for innovation in several of the existing ex-ante rules: R&D, risk capital, and the protection of the environment. The deadline to respond to the Communication was 21 November, 2005. [EC (2005g)]

4.1. WTO/GPA REGULATION

The WTO's Agreement on Government Procurement (GPA) regulates the procurement policies and practice of several WTO members including the European Union and the US. This international agreement is based on the principles of non-discrimination and free trade.

All 25 EU Member States are members of the GPA.¹⁰ Signatories to the WTO GPA undertake to provide national and non-discriminatory treatment for trade in goods, services and suppliers of the other signatories for government contracts. The GPA opens up its members' government contracts to international competition. Suppliers of each GPA member have the right to compete for other GPA members' government contracts, under the conditions laid down in the GPA. The GPA rules aim, inter alia, to ensure that GPA members do not discriminate against foreign suppliers covered by the Agreement.

The WTO GPA defines some exemptions in specific areas, which include R&D services and prototypes or a first product or services. According to the GPA Article XV, open tendering procedures need not apply to purchasing R&D services and prototypes. Furthermore, there is a general exception for procurement in order to protect essential security interests relating to the

¹⁰ The GPA has become a part of the internal law of the European Community from 1 January 1996

procurement of arms, ammunition and war material or procurement indispensable for national security or national defence.¹¹

Article XXIII of the GPA refers to the exceptions the signatories may apply to their own procurement when imposing or enforcing measures necessary to protect public morals, order or safety, human, animal or plant life or health or intellectual property, or relating to handicapped persons, philanthropic institutions or prison labour. There is a general exception for procurement necessary for the protection of essential security interests relating to the procurement of arms, ammunition and war material or procurement indispensable for national security or national defence.

4.2. EU REGULATION

EU public procurement laws aim to increase competition and transparency in order to create opportunities for businesses, better value and higher quality services for the taxpayer.

In 2004, the Commission adopted a new legal package on public procurement. The package consists of a new consolidated procurement Directive for the public sector 2004/18/EC,¹² and a new Directive for the utilities sectors 2004/17/EC.¹³ These Directives had to be adopted by Member States by Jan 2006.

With regard to innovation, four major new changes are introduced by these Directives [EC (2005d)]:

- Competitive dialogue¹⁴

In addition to the open and restricted procedure, the legal framework provides contracting authorities with the possibility to use a new procedure in some restricted cases, namely 'competitive dialogue'. It is understood that the use of the competitive dialogue is an option in cases where foresight techniques have not been completed successfully. This situation exists when the contracting authorities still find it objectively impossible to define the means for satisfying their needs or to assess what the market can offer in terms of technical solutions and/or financial/legal solutions.
- Technical specification

Unlike in the previous system where the use of performance based requirements needed to be explained and justified, the new Directives have put them on the same level as references to standards. Contracting authorities are also able to define specifications by reference to public sector performance or functional requirements as opposed to referring to standards. The facility to specify requirements in terms of functional performance or standards will allow suppliers to produce any configuration of technology they feel can meet the need.
- Framework agreements

The legal framework provides the contracting authority with the opportunity to use framework agreements. Relevant to innovation, these agreements enhance the use of multiple sourcing techniques, the use of functional specifications and allow contracting authorities to request technological developments without restarting the tendering procedure.

¹¹ Source: http://www.wto.org/english/res_e/booksp_e/analytic_index_e/gpa_02_e.htm#article6

¹² Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts

¹³ Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors

¹⁴ Competitive dialogue is a flexible procedure which preserves not only competition between economic operators, but also the need for the contracting authorities to discuss all aspects of the contract with each candidate

5. THE MARKET OF PUBLIC PROCUREMENT

The public sector in Europe plays a major role in the economy. According to OECD data, public expenditure constitutes a larger share of GDP in the EU (47%) than in the US (36,5%), Japan (38,2%) and Korea (30,9%). Public procurement is part of overall public expenditure, which also includes personnel costs (salaries and other payments), subsidies to industry, transfers to families (health, welfare, assistance, etc.) and public investments.

Public procurement in the EU as a whole accounted for 16.3% of GDP in 2002, at around 1,500 billion Euros. However, there is a wide variation among the Member States of between 11.9% (Italy) and 21.5% (the Netherlands).

According to both EC and OECD statistical data, regional and local (sub-central) governments have a larger share in total procurement than central governments. EC (1997), also quoted in the recent expert group report on public procurement for research and innovation [EC (2005d)], estimates that “procurement by sub-central governments is larger than procurement by central governments by an estimated margin of two to three times depending on the ratios measured”. These facts highlight the importance of sub-central government in procurement policy, and pinpoint the reasons behind the high fragmentation of implementing public procurement processes.

5.1. ICT IN THE PUBLIC PROCUREMENT MARKET

ICT expenditure in the public sector is not easy to measure. There are no comparable official data available. However, the following statistical data, coming from industry, illustrate the fact that ICT public procurement is a significant part of the overall ICT market in both absolute and relative terms.

According to EITO (2005), government (not including health-care and education) in 2003 was the second largest purchaser for IT¹⁵ expenditure, after the banking and finance sectors. The government and health-care sectors produced the first and second highest growth rates between 2003 and 2004.

In the EU, the size of the IT market was €297 billion in 2004. The share of the public sector was around 20% in 2004 (amounting to about €60 billion), and this share is growing [EITO (2005)].

According to EITO’s forecast, the “*public sector will continue to offer the best short-term growth opportunities*” for IT purchasing in the coming years. Health and e-Government are expected to produce the highest growth rate (over 6% annually), but the market for education and transport/utilities will also grow [EITO (2005)]. With regard to the size of local and regional ICT expenditure, EITO (2002) reports that, in 2001, local and regional governments were responsible for 55% of total ICT government expenditure (versus 45% of the central government expenditure).

Another sector, partly overlapping with ICT, where public organisations are significant purchasers is the media and audiovisual industry. According to the latest available data from the European Audiovisual Observatory [EAO (2004)], the audiovisual market (including film, television, video/DVD and new media) was worth of €99 billion in 2002. Public broadcasters represented 27% of this market.

¹⁵ The EITO definition of IT “*includes industries of hardware for office machines, data processing equipment, data communication equipment, software and services*”. No data are available for telecommunication expenditure;

5.2. THE SIZE OF PUBLIC TECHNOLOGY PROCUREMENT

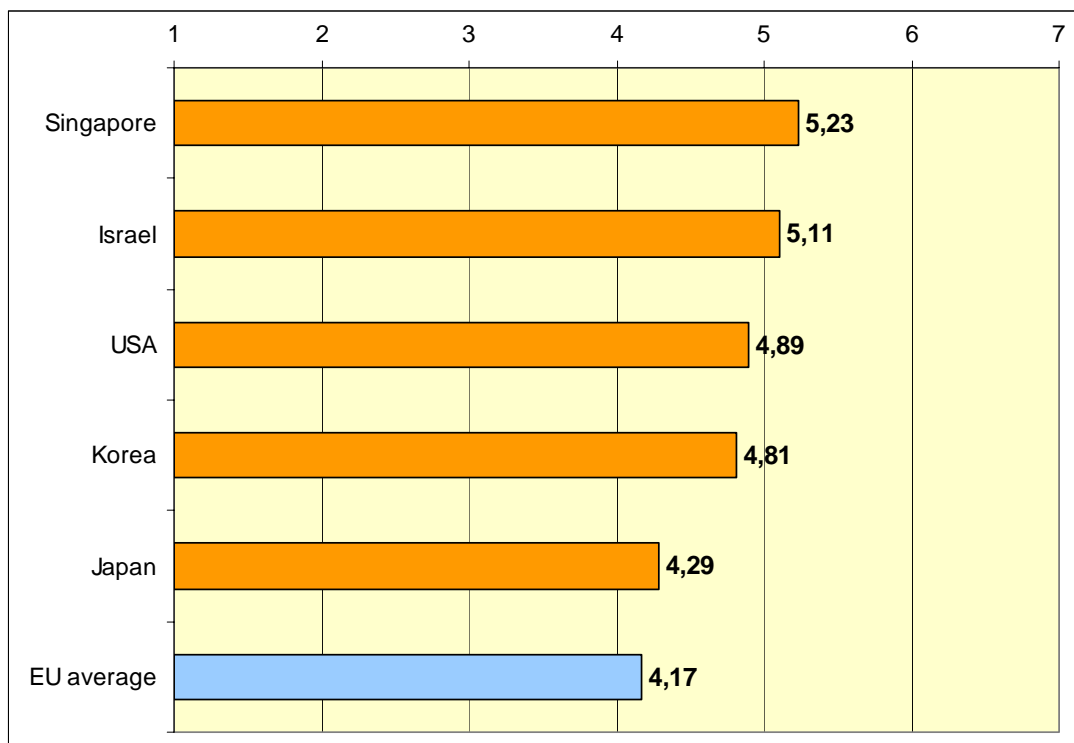
There are no comparative data available that give a credible picture of the size and structure of PTP markets in the EU, the US and Japan/South-East Asia.

However, some indirect indicators can be used to give an overall estimate of this market.

Gartner Group reported in 2003 that 65% of all expenditure in eGovernment is currently focused on maintaining current IT infrastructure, with a further 30% spent on enhancements to existing standards. This means that currently only 5% of all eGovernment expenditure is actually spent on technology-innovative projects.¹⁶

A worldwide survey of business leaders, carried out for the World Economic Forum [WEF (2003)], provides data on technology public procurement. It assesses to what extent government purchase decisions are based on technology and encourage innovation, rather than considering only the price. It appears, in effect, that European countries are less concerned about technology and innovation than the US, Korea or Japan. However, even in the European countries technology is considered slightly more important than cost in driving procurement decisions (see Figure 3).

Figure 3. Government procurement of advanced technology (government purchase decisions for the procurement of advanced technology are based on: 1= price; 7=technology and encourage innovation)



Source: IPTS elaboration of WEF (2003). The EU average is weighted on population and it does not include Cyprus, Luxemburg and Malta as data were not available

¹⁶ Quoted in the report of the eGovernment Research Advisory Workshop - 8th December 2003, Brussels (http://europa.eu.int/information_society/activities/egovernment_research/doc/8_dec_2003/eGovernment%20Research%20Advisory%20Workshop%20081203_v31.PDF)

Story #5: Non-European cases for national public procurement policies in promotion of innovation

United States

While there is no explicit policy on PTP in the US, there are several policies that positively influence the innovativeness of public procurement. Firstly, defence expenditure has a central role and historically dominated US federal expenditure in R&D. In 2001, defence accounted for 50.5% of R&D public provisions,¹⁷ versus 14.5% in EU [EUROSTAT]. Defence procurement was responsible for the origin and development of major ICT industries in the US, and in doing so it deliberately aimed at involving also new firms, where in Europe procurement policy mainly aimed at promoting established firms and national champions (Edquist et al. 1999).

Secondly, procurement policy in the US has been explicitly oriented towards social goals, like supporting small businesses or businesses owned by women or minority groups. Small businesses enjoy preferential treatment, particularly with regard to procurement of R&D. Here, they can benefit from the SBIR programme which establishes, among other things, that 2.5% of all R&D procurement should be reserved for small business. (The US definition of small business is more flexible than in Europe. Depending on the sectors, companies up to 1500 employees are considered to be SMEs, regardless of their annual revenues). As far as social goals are concerned, the strong requirement for accessible ICT in public administration formulated by the Disabilities Act is recognized as successful in promoting the development of accessible ICT, as reported in the Communication of the EC on eAccessibility [COM(2005) 425].

Korea

Government actions have a central role in the Korean innovation system. For example, the recent Korean ICT strategy (“IT 8 3 9 strategy”) is built around the concept of ubiquitous computing, and relies on the government playing a strong role in introducing new telecommunication services such as new wireless technologies (like WiBro and 3G /W-CDMA). The government is responsible for building the necessary infrastructure, leading standardization and creating an initial market.

¹⁷ Data on government appropriations or outlays on R&D, divided between military or civil purposes, refer to budget provisions, not to actual expenditure.

6. FACTORS INFLUENCING PUBLIC TECHNOLOGY PROCUREMENT

The literature review reveals the following factors as enablers or barriers for PTP: the involvement of small and medium sized enterprises, the acceptance of variants in the offering procedure, the public sector's risk taking capacity, a life-cost assessment, the use of competitive dialogue and the readiness of the user/purchaser to run the innovative process. A more detailed description of each factor, its relevance for PTP, and available data on the situation in the EU is given in the following paragraphs.

SME involvement

Small firms produce a significant share of innovation. They are among the drivers of today's technological changes, particularly as regards fresh ideas.

According to a report carried out by the European Commission [EIM (2004)], SMEs do not appear to be particularly disadvantaged in public procurement. The majority of public procurement contracts in the EU are awarded to SMEs. Data analysis, provided by the TED-MAPP database, shows that about 78% of contracts in 2001 was awarded to SMEs (which represented 99.8% of firms in the economy). In terms of value of the contracts, the study estimates that 43% of the value of public procurement contracts was won by SMEs (SMEs represent 53% of total turnover in the economy). The picture, however, varies considerably according to sector (SMEs' participation is higher in the construction sector than in business services) and Member State. Last but not least, these statistical figures do not provide information on PTP practice [EC (2004)]. Also, the European Federation of High-Tech SMEs points out that the General Procurement Agreement gives SMEs in the US much more favourable conditions for accessing public markets, putting European SMEs at a disadvantage [EFHS (2005)].

A concentration of orders that guarantees suppliers a sufficient market is an important stimulus for innovation. These economic considerations frequently push decision makers toward concentrating orders and favouring suppliers as industrial focal points that can deliver end-to-end solution. This concentration/aggregation process, however, could at the same time easily lead to the exclusion of small firms from many public procurement processes because of their lack of capacity and resources. If the procurement practice excludes innovative SMEs from a tendering process, in particular when products or services not available on the market are targeted, then the consequence for the procurer is loss of opportunities and resources, and probably value as well. This is unfavourable for both innovation and the efficiency of public procurement.

This challenge of more involvement of SMEs is usually managed by breaking the procurer's requirement into smaller parts or by encouraging the large suppliers to form alliances with smaller, creative partners or to involve SMEs in the project.

Life Cost Assessment¹⁸

The way the tenders are evaluated may provide a favourable environment for PTP.

Innovation is costly in the short term, but delivers substantial benefits in the medium and long-term. The timeframe of any cost/benefit analysis is therefore an important variable. Public authorities have to consider not only the single cost of purchasing the goods or services, but also the total life costs. In this way, they would open up opportunities to obtain more value for money, and promote better innovation. The use of Life Cost Assessment (LCA) in evaluating proposals, as well as improving value for money, is also an important index of the innovation potential of public procurement.

¹⁸ Life Cost Assessment (LCA) means "taking into account other costs than the purchase price of the product, but also the costs incurred during the life-time (energy use, maintenance)." [Virage (2005)]

A study on green procurement practices, carried out for the European Commission (Virage 2005), reported that 50% of interviewed public bodies declare they include LCA in their tender documents. However, a survey of actual tender documents carried out by the same study revealed that in fact only 1% of these organisations use LCA. It appears that proper LCA remains largely absent from the existing European procurement practice.

Acceptance of variants and usage of functional specification

Innovation, by definition, favours creative thinking and looks for unexpected solutions for well-defined problems. In most cases, this process is inspired by the chance to think alternatively, particularly in the early phases of the project. Innovative responses to a public procurement call would therefore be encouraged by allowing bidders to submit variants, which meet the core specification.

As discussed in Chapter 4, the new procurement Directives (2004/17/EC and 2004/18/EC) make it easier for purchasers to accept proposed variants and to express their needs as functional specifications, rather than in terms of specific standards or solutions. Thus, the tender does not pre-define the technical solution, but is open to alternative technical ways to address the needs as expressed in technical specification. The suppliers can therefore propose alternative and innovative technical solutions.

According to Virage (2005), 35% of public administrations declare that they use functional specification, and 20% of them declare they use green contract variants.¹⁹ However, this statement should be treated with the same caution as the LCA data –in fact, the actual usage could be much less.

Risk sharing

Innovative projects have a high risk of failure and may require substantial investment. Firms are not always willing to take this risk alone, since they feel that they are unable to capitalise on the outcome. The high transaction cost for assessing and monitoring the risk of such innovative projects may also lead to loss of creativity and risk-taking capacity. For these reasons, the sharing of risks should be a significant aspect of the public procurer's approach in PTP processes.

The early analysis of risks connected to the procurement is an important precondition for a successful innovation process. Later, in the contracting phase an appropriate sharing of risks and rewards between the supplier(s) and procurer/user/customer should also be considered as a major factor in innovative projects.

Government agencies and other public organisations directly involved in the procurement processes, should recognise that public services also have to be risk-takers, since failure can not be fully avoided if the ultimate aim is to maximise the productivity and efficiency of these services. [EC (2003)]

The usage of competitive dialogue

One of the major characteristics (and pre-conditions) of PTP, is that there must be an on-going dialogue between the procurer and the supplier.

¹⁹ Green contract variants: “Suppliers can be asked to submit greener variants for the same product. Whilst doing so, the contracting authority will set minimal technical specifications for all bids to comply with. This will allow the contracting authority to choose a green variant if it has accumulated most points at the award stage” [Virage (2005)]

PTP needs a much better and closer dialogue between the supplier(s) and the user(s)/procurer(s). This leads to a joint learning procedure and a common “discovery” of possibilities.²⁰

The new procurement Directive introduced a new instrument, called “competitive dialogue”, to facilitate the communication and exchange between potential suppliers and the public purchaser. It is therefore interesting to look at how it has been used to date, although it is clear that no strong conclusion can be drawn as the Directives have not yet been implemented in every country, and the instrument has only just become available.

Based on the TED²¹ database of public tenders (we analyzed tenders published in the Official Journal between 1 November, 2005 and 20 February, 2006 since the first competitive dialogue was launched on 3 November, 2005), competitive dialogue has been used in only 6 Member States (France, Denmark, the UK, Germany, Italy and Malta) and only for 64 tenders out of 79 682 (0.1%).

However, it is important to point out that out of these 64 tenders, 22 (34%) were for “computer related services” which is an important part of ICT.²² So far, ICT has been one of the main areas where “competitive dialogue” has been used.

Experts confirmed that competitive dialogue is an index of procurement open to innovation, but also point out that competitive dialogue is considered an exception to normal procedures. It is therefore expected that it will be used in a minority of tenders. The “design contest”,²³ which is also applied in the procurement process, can also be considered as open to innovation, and it has been seldom used to procure ICT services (0.1% of all tenders for procuring “computer related services”).

Smart customer – the importance of an organisation’s competency

The public sector user’s technical capacity also plays an important role in the successful management of public technology procurement.

Since PTP needs an ongoing relationship between the buyer and the supplier in order to maximise the benefit for the public, the procurer in such cases must become an ***intelligent customer***.

In order to stimulate innovation, the intelligent customer must [based on EC (2005d)]:

- Identify the needs and opportunities: the customer must be aware of trends in the market and technology evolution, which requires a strong ongoing market analysis, technology assessment and foresight;
- Specify functional, cost and quality requirements: the customer needs to maintain a dialogue with potential suppliers long before the public procurement procedure is launched - special attention must be given to the phases before concrete procurement processes. An early and ongoing communication on

²⁰ Jakob EDLER: “*Procurement and Innovation: The Context*”, Power Point presentation, Conference on Public Procurement on Stimulating Research and Innovation, Brussels, 14 December, 2005

²¹ Tender Electronic Daily (<http://ted.publications.eu.int/official/>) is a service of the European Commission which contains all the public tenders, published in the Official Journal of the European Communities. It is estimated that it covers 22% of total procurement in terms of value in the EU Member States

²² The first tender using competitive dialogue was published on 3 November 2005

²³ “*The design contest is a competition, in which a contracting authority invites the entry of plans and designs to be judged by a jury under the rules of the competition. As a result, the authority – in most cases – is to acquire the use or ownership of the plans or designs selected by the jury. Design contests may also involve the award of prizes and are mainly used in the fields of town and country planning, architecture and engineering or data processing*”. (Danish Competition Authority - <http://www.ks.dk>)

future procurement strategies with potential suppliers in the market would orient companies in their decisions for long-term planning and R&D. Though innovation from suppliers should be encouraged throughout the procurement and contract lifecycle, the greatest possibilities arise during the earliest stages, when policy is being formulated [OGC (2004)];

- Have sufficient special techno-economic knowledge and openness to new, effective methods when assessing tenders for innovative projects (particularly PTP projects);
- Have the specific skills and competencies needed to design and manage contracts (including the associated training, after-sales service and IPR issues);
- Employ human resources with specific training and equipment for performing functional and environmental tests in order to be able to accept the end product and verify contract performance.

6.1. BARRIERS

With regards to the barriers to PTP, it is worth looking at evidence collected on the practice of green procurement and formulating a hypothesis by analogy. The study on green procurement has identified 5 main barriers [Virage et al. (2005)]:

Perception that environmentally friendlier products would be more expensive	44% of respondents
Lack of knowledge about the environment	35%
Lack of management support (including money and time), strategic focus and organisational policy promoting green procurement	33%
Lack of practical tools and information	25%
Lack of training for public procurement officers	25%

While these data address the issue of Green Public Procurement, we also expect them to be relevant to Technology Public Procurement because of their general nature. For example, as the EU awareness building and clarification effort on green procurement (such as the green procurement handbook) has been effective in clarifying the concerns of procurers, it could be that the envisaged “handbook for innovative procurement” and other information efforts could achieve similar good results. Also, though cost would remain the main concern of public procurers, strong political leadership towards Public Technology Procurement, or away from it, could make a significant difference to the attitude of procurers.

7. MEMBER STATES' PRACTICE IN RELATION TO PUBLIC TECHNOLOGY PROCUREMENT

This chapter illustrates the situation and the policies on PTP in some Member States, and is mainly based on interviews with experts. It aims to place issues previously discussed in the concrete context on procurement policies and practices "on the ground".

7.1. THE SIZE OF ICT PUBLIC PROCUREMENT

As mentioned in Chapter 5, public procurement constitutes a significant part of the economy in the EU, but its size varies by country, from 21% of GDP in the Netherlands to 12% in Italy.

Table 2: Total Procurement as a Percentage of GDP (2002)

Country	Share of public procurement as % of GDP	Country	Share of public procurement as % of GDP
Belgium	15,22	Luxembourg	15,48
Denmark	18,76	Netherlands	21,46
Germany	17,03	Austria	16,46
Greece	12,62	Portugal	13,26
Spain	13,02	Finland	16,45
France	16,62	Sweden	20,49
Ireland	13,30	UK	18,42
Italy	11,88		
EU15		16,30	

Source: EC (2004) – Data not available for new Member States

Table 3: Total Public Administration (central, regional and local) ICT expenditure, 2002 (million €)

Country	Government expenditure in ICT	Country	Government expenditure in ICT
Austria	812	Italy	2 873
Belgium	946	Luxembourg	67
Denmark	1 005	Netherlands	1 549
Finland	706	Portugal	370
France	5 208	Spain	1 934
Germany	5 597	Sweden	1 471
Greece	288	UK	6 228
Ireland	252		
EU15		29 306	

Source: EITO (2002)

Regarding the specific field of ICT, no official statistical data are available. However, EITO (2002) provides data on ICT expenditure of national, regional and local public administrations (excluding health, education, defence and transport).

More recent data from consulting research [IDABC (2005) based on data from Kable], covering the whole of the public sector (also including health, education, defence and transport), reports a total ICT spending in the EU of €87 billion for 2005. The UK public sector, with an estimated total ICT expenditure of €21 billion, is confirmed as the leading purchaser in Europe, spending about 40% more on ICT than either France or Germany, mainly due to flagship projects such as “*Connecting for Health*”, “*Criminal Justice IT programme*”, and the “*Defence Information Infrastructure project*”. Denmark and Estonia have the highest spending in proportion with population and GDP respectively.

7.2. THE INSTITUTIONAL SETTING OF ICT PUBLIC PROCUREMENT IN THE MEMBER STATES

As a general consideration, the situation of ICT procurement in the public sector is **fragmented**. We cannot consider the public sector as one single purchaser. There is fragmentation within each organisation (individual departments²⁴ can buy ICT separately), between different administration (such as municipalities in the same region), between different administrative levels (local, regional, national) and between different domains (health, defence, education etc.).

However, in every Member State there are important initiatives to **coordinate public sector purchases**, which have been ongoing for a few years now. In some countries, such as Finland, central purchasing agencies have been created to carry out framework purchases (although in some cases, such as Norway, they have been closed later to ensure more competition). In other countries aggregation happens voluntarily, on a case by case basis. Specific departments or agencies, such as the Office for Government Commerce in the UK, are created to provide support services and market analysis to improve the procurement process, often linked to the introduction of e-procurement initiatives.²⁵

This coordination and aggregation of purchases is mainly concentrated in commodity goods and services, where joint procurement and economies of scale are easier to achieve. Experts confirm that the main driver for the reform of procurement (often linked to the introduction of e-procurement) is the high potential impact in terms of cost savings. This is indeed the “high impact” attributed to e-procurement that the Manchester Ministerial Declaration on e-government is referring to.²⁶ For more sophisticated ICT goods and services, there is no aggregation and the coordination effort is “softer” (guidelines, information, awareness raising), and it is often limited to e-government, without connection with health, education or defence. For example, in Italy the central purchasing agency carries out the purchases for computers and basic software. For the purchase of advanced solutions, however, the IT public agency CNIPA has issued a 600-page book with detailed guidelines on strategic IT purchase management, produced in cooperation with the IT industry association.

In the specific field of ICT in many Member States, agencies have been created at national and local level to support e-government initiatives, including supporting and coordinating the ICT

²⁴ We use the generic term “department” to define a functional division of government, which can have different denomination in different countries such as Ministry, Department, Office, Agency, Directorate General.

²⁵ For a complete overview of procurement institutional setting in Member States see Ramboll Management (2004)

²⁶ The Manchester Ministerial Declaration on eGovernment was approved unanimously, on 24 November 2005, by the Ministers of European Union (EU) Member States, Accession States and Candidate Countries and Ministers of the European Free Trade Area (EFTA) Countries, responsible for eGovernment policy, meeting in Manchester on the occasion of the Ministerial eGovernment Conference “Transforming Public Services” of the United Kingdom Presidency of the European Council and of the European Commission (see also <http://www.egov2005conference.gov.uk>).

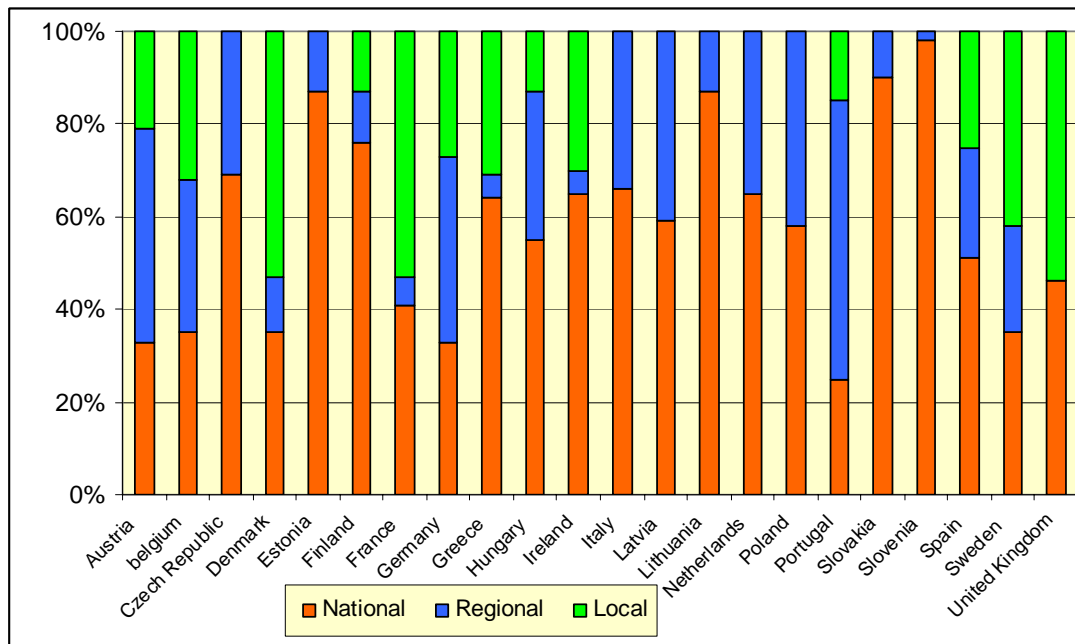
purchases by public administrations. One of the main objectives of the public sector is to acquire high-level skills from the private sector, and sufficiently flexible provisions which would make it possible to offer more competitive salaries (e.g. FEDICT in Belgium).

In short, an important **capacity-building effort** is being made in Member States' administrations on both procurement and ICT management skills.

As regards e-government specifically, interoperability and security of applications are the two main drivers for coordinating purchases across government departments and institutional levels. Central government often sets standard requirements which have to be respected by all the administrative levels. In France, for example, a new regulation requires ICT suppliers of all levels of public administration to certify that their products respect the national standards for security and interoperability.

In terms of size of ICT expenditure at the national, regional and local levels, recent estimations by the eGEP project²⁷ show large variations across the Member States, which, when aggregated, correspond to the already mentioned division (45% national vs. 55% local and regional). (See Figure 4)

Figure 4. EU22 total public administration ICT expenditure breakdown by administrative level, 2004



Source: Estimation from eGEP questionnaire, except for the UK data taken from Kable report on “ICT spend in the European public sector to 2007”

Regional and local expenditure is obviously more fragmented. However, experts pointed out specifically that a few large metropolis and regions have an innovation potential in procurement as large as the central government in terms of budget, innovation-orientation of the demands, and specialist skills in procurement and ICT.

²⁷ eGEP is a research project on the economics of eGovernment, funded by the Commission’s DG Information Society (www.rso.it/egep). eGEP definition of expenditure is larger than procurement, as it includes internal ICT staff, whose cost is estimated at 20% of total ICT expenditure. These estimates only relate to general administration, and exclude health and education.

Cross-border joint purchases are very seldom carried out, and then mainly within EU level initiatives such as Galileo²⁸ and GEANT.²⁹ The possibility of cross-border joint purchases is perceived as interesting by experts, but would require extensive mapping of needs and actors of public procurement – a respondent judged it to be “*two steps ahead*” the current situation.

7.3. NATIONAL POLICY INITIATIVES ON PUBLIC TECHNOLOGY PROCUREMENT

In parallel with the ongoing initiatives at the EU level as described in Chapter 4, some Member States themselves have taken initiatives in PTP.

The guidelines for national reform programmes published by the European Commission included, among the microeconomic reforms envisaged to raise Europe’s potential, a specific option for “*encouraging public procurement of innovative products and services*” [EC (2005h)]. When looking at the actual National Reform Programmes (NRPs), produced by each Member State at the end of 2005, however, public procurement is mentioned as a reform area only insofar as it concerns the promotion of competition and open markets. The Commission review of these Programmes confirms that “*very few Member States present plans to use public procurement to promote innovation*” [EC (2006)]; in fact, only the Netherlands and Portugal are mentioned.

However, National Reform Programmes provide only a general picture of each country’s innovation strategy. The interviews with experts provided a more detailed picture, showing an increasing awareness of the opportunities and early actions.

Story #6: The Netherlands’ strategy for innovative procurement

The 2001 “Action plan on Professional Procurement and Purchase”, the main strategic document in the field of procurement policy, deliberately aims to promote innovative procurement, “*by presenting a challenge in the invitation to tender and tailoring the contract forms to this. The government acts as a demanding customer and invites innovative tenders*” [Ramboll Management (2004)]. The key concept is “launching customership”

A knowledge centre has been created (www.pianoo.nl), which aims to raise awareness through, for example, the publication of a fact-sheet with information on innovative procurement. It also supports knowledge sharing between public procurers from all domains of government, including health and education.

The “Innovation Platform” (a joint government-industry initiative) has proposed an action plan which envisages specific actions and targets, such as a 2.5% target of the total procurement budget reserved for goods or services not yet available on the market.

As we mentioned, in many Member States, procurement is undergoing a process of modernisation, with high-profile policy initiatives and capacity-building effort. However, only in the UK and the Netherlands does this modernisation include an explicit focus on procurement as a demand-side measure for promoting innovation. In these countries, the promotion of the innovative dimension of procurement has been given political priority and channelled through the existing procurement support structures, such as the Office for

²⁸ GALILEO is the European Satellite Navigation System, a joint initiative of the European Commission and the European Space Agency (ESA).

²⁹ The GÉANT project is a collaboration between 26 National Research and Education Networks (NRENs) across Europe, the European Commission, and DANTE.

Government Commerce³⁰ and Pianoo.³¹ This means that PTP or innovative procurement is not an add-on to existing measures for improving procurement, but an integral part of modernisation.

Story #7: The United Kingdom's strategy for innovative procurement

Innovative procurement is explicitly identified as an opportunity to promote innovation in the Innovation report of 2003 "Competing in the Global Economy: the Innovation Challenge", which committed the DTI (Department of Trade and Industry) and the OGC (Office for Government Commerce) to working together to encourage innovation in public procurement markets (<http://www.dti.gov.uk/innovationreport/>).

Following this, in 2004, the OGC formulated a procurement guidance on capturing innovation from suppliers [OGC (2004)].

The DTI's five year programme, published in 2004 [DTI (2004)], committed the DTI and the OGC to:

- establishing an ideas portal, '*a mechanism for firms, inventors and researchers to submit unsolicited, innovative proposals to the public sector.*' In this case, the OGC and the DTI are now working closely with the National Health Service to evaluate their ideas portal for wider government use.
- Working together on a number of specifically identified tasks to support the promotion of innovation in public sector procurement, including identifying significant and high profile projects where government is seeking innovative solutions.

Furthermore, several initiatives aim to improve ICT procurement in the public sector, in cooperation with the IT industry. The Senior IT Forum, composed of an equal number of senior representatives from Government and the IT industry, was set up to identify and address joint systemic issues that occur in the acquisition and implementation of Government IT-enabled projects. Concept Viability is a service, provided by the trade body for the ICT sector (Intellect) and developed in collaboration with OGC, to help Public Sector clients take early market soundings to test the practicability of their ideas.

A common feature of these two countries is the institutional involvement of the "innovation policy" department in procurement policy. In practice, this means that the initiatives described above are promoted not only within procurement and ICT policies, but also with the direct involvement of the innovation policy actors. For example, in the UK, the OGC works not only with ICT departments such as the e-government Unit, but also with the Department of Trade and Industry (in charge of innovation). In the Netherlands, the Minister of the Economy's remit covers both procurement and innovation policy.

Furthermore, both the UK and the Netherlands have also integrated health and education services into their strategies for innovative procurement.

In both countries, this effort is still at an early stage of policy implementation, and is mainly deploying "soft" measures such as awareness raising, training and exchange of good practice.

³⁰ "OGC is an independent office of the Treasury and works with public sector organisations to help them improve their efficiency, gain better value for money from their commercial activities and deliver improved success from programmes and projects" <http://www.ogc.gov.uk/>

³¹ Pianoo is a knowledge centre on public procurement, launched in 2005 to stimulate and facilitate the enlargement of the expertise on public procurement with all contracting authorities so that they themselves can achieve best value for money. <http://www.pianoo.nl>

So far there are no measurable results, nor concrete examples of purchases stimulated by the policies, although in some Member States such as the Netherlands (and Portugal as declared in its NRP) the possibility of setting targets for innovative procurement is being discussed. Furthermore, innovative procurement initiatives in these countries are driven by innovation departments in the national governments, and consensus has not yet been built up in other departments and institutions. Awareness raising and diffusion of information on innovative procurement is still very important even in countries where it is already a national policy issue.

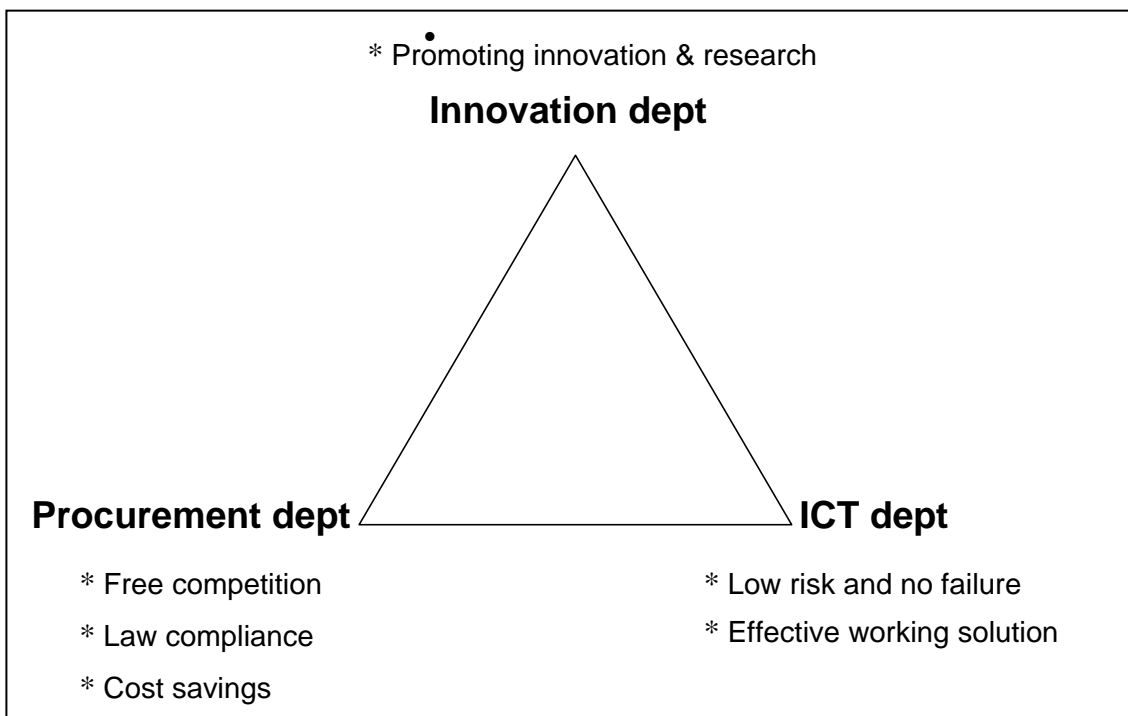
7.4. THE PUBLIC ACTORS OF ICT-RELATED PUBLIC TECHNOLOGY PROCUREMENT

Traditionally, the purchase of ICT goods is carried out jointly by an institution's ICT department and public procurement department. Interviews with experts from diverse backgrounds clearly showed that ICT departments are mainly concerned with the reliability of the product to be purchased, and therefore define the specifications of the tender. Procurement departments are concerned mainly with the compliancy with the law and the possible cost savings, and define the tender and the contract provisions.

This is a general description and how things are organised may, of course, vary in practice in each institution. ICT departments can have internal procurement experts, just as procurement departments can have their own ICT experts. The actual purchase can be carried out by one department with the support of the other. A separate department (e.g. health) can have his own ICT and procurement experts internally. However, in every case, the purchase involves ICT and procurement specialist actors, whose main policy goals are cost savings and reliability.

Therefore, traditional procurement of ICT does not explicitly include innovation goals. In contrast, more developed procurement policy approaches to innovation (i.e. in the UK and the Netherlands) also involve the innovation departments, which aim to promote innovation in the economy.

Figure 5. The public actors of PTP and their goals



For example, interviewed experts from procurement departments were quick to point out that different policy departments, from time to time, come up with the idea of using the huge

leverage of public procurement to support (or at least not to contradict) policy goals – the foremost example being environmental public procurement. As one expert pointed out; “*the difficulty we have is that innovation is just one of the policy areas. I have something like 24 policies run by different government departments which say ‘oh, we spend a huge amount of money on procurement, we could pool it to deliver our policy’ but the poor procurement officials can’t consider policies and standards for each area*” (expert interview). At the moment, though innovation is beginning to be recognised as a possible outcome of public procurement, cost savings are still by far the most important policy objectives. For example, in the UK the performance indicators for public procurement relate to cost savings rather than impact on innovation.³² Some procurement experts declare that the innovation impact should not necessarily be a separate goal or a stand-alone criterion for selecting proposals. Instead, innovation is considered as a by-product of efficient and effective procurement. If procurement is carried out professionally, if the requirement is appropriately defined in an open process which includes, if necessary, a dialogue with suppliers, and the life costs of the goods or services are considered, it naturally favours innovation, in those cases where innovation delivers benefit.

On the other hand, experts with ICT backgrounds report specific concerns with avoiding failure. ICT projects in the public sector have a bad reputation because of past failures of high-profile projects [IDABC (2004)]. Policy-makers and project managers are increasingly under pressure to avoid this and deliver timely results. This could discourage the public sector from taking risks, and make PTP more difficult. The main concern of ICT procurers, today, is to have reliable goods and services.

The cultures, approaches and aims of these actors are quite different, and do not always converge. As ICT procurement is carried out by ICT departments and procurement departments, each with their own policy goals, in most countries innovation goals are not directly included within the process.

7.5. HOW INNOVATIVE IS PUBLIC PROCUREMENT?

None of the interviewed Member States have statistical data on the size of PTP. No monitoring has been carried out on the degree of innovation of the purchases. Demand for such data is beginning to emerge.

Interviewed experts all believed that PTP makes up a very small part of procurement as a whole so that the very usage of percentages for representation would make no sense.

In several countries, they specify that the main challenges of ICT procurement in the public sector today are the maintenance of existing ICT levels in spite of budgetary restrictions, and the inclusion of small municipalities and peripheral areas in the deployment of e-government. Innovative projects are often allocated the smaller part of the budget, and though these projects are generally new for the public sector, they are not new to the market, but usually “*copy the private sector*” (expert interview).

While this is a general picture of overall ICT procurement, the degree of innovation of ICT procurement varies significantly from country to country, and there are niches of greater innovation within areas such as defence, health, transport and taxation.

Experts pointed to examples of innovative procurement:

- The large scale deployment of electronic ID card in Belgium and Italy
- The Electronic Document Systems within the Federal Administration of Austria
- The Electronic Taxation System in Finland

³² “OGC's target for the 2003-2004 to 2005-2006 period is: by 2005-06, deliver £3 billion of value for money gains in central civil Government procurement through the Office of Government Commerce” (<http://www.ogc.gov.uk>)

- The 24/7 Multi-channel Public Service Delivery in Sweden
- The Electronic Patient Management System in the Netherlands

A first analysis of these projects shows that they do not involve early-stage innovation of emerging technologies, but are rather adaptations or improvements (**incremental** innovations) of existing solutions, or even non-technological innovation due to the large scale of deployment and the complexity of the public sector (organisational and management issues etc.). It is difficult to detect any requirement for genuine research and development effort in these examples.

On the other hand, the existing literature refers to examples of PTP which include **radical** innovations, involving extensive research and development and creating a market for non-existent products and services at an early stage of the innovation process, such as the semiconductor industry in the U.S., the digital telephone switch and the cellular networks in the Nordic countries [(Edquist et al. (1999))].

This is not an argument in favour of one particular type of innovative procurement, but rather points to the different nature of these cases, and to the need for taking the different stages of innovation into account when designing PTP policies.

7.6. FACTORS INFLUENCING PUBLIC TECHNOLOGY PROCUREMENT IN MEMBER STATES

As we have seen in Chapter 6, there are a number of factors which can favour or hinder PTP. We analyze here how these factors are dealt with in the Member States.

The supplier is more likely to propose innovative solutions if he can keep any resulting **Intellectual Property Rights** and further exploit the invention. Experts indicate that generally, in Member States, governments keep the IPR in order to facilitate adoption by other departments and save money, although no distinction was made between IPR and rights of usage. Furthermore, it was reported that allowing suppliers to further exploit a product originally developed for the public sector can be perceived by the procurer as an improper advantage, rather than a positive result in terms of economic impact. There are cases where the exploitation of an innovative product by the supplier becomes a source of revenue for the public sector which keeps some royalties on the product it has purchased and cooperated to produce. However, in the UK, recent OGC guidance recommends that intellectual property rights should ultimately rest with the party who is best able to exploit it [OGC (2004)].

Another factor that deeply affects the possibility of PTP is the **sharing of risk** between the supplier and the purchaser. In public procurement, risk linked to PTP still lies totally with the suppliers. There are many supporting documents and guidelines for risk management, for example in the UK in the context of Public Private Partnerships, but they mainly address financial and management risks, not risk-sharing for technological uncertainty. In these cases, a risk is usually attributed to the party which exercises the most control over the project.

Specific provisions for dealing with **unsolicited proposals** can also contribute to PTP, by helping to identify potential areas for exploitation of innovation which were not considered by or known to the public sector. Only a few examples of this have been reported, although in many countries there is an established dialogue (at the strategic level) between government and representatives of the ICT industry to share information about market developments. At the operational level, the UK “Ideas Portal” initiative is one example of such an initiative, and also the “Concept Viability” initiative (as they facilitate communication between industry and government). Both initiatives are described in story 7.

This confirms the importance of dialogue between suppliers and procurers as a pre-requisite of innovation. Due to the recent or on-going transposition to the new directives, the use of a recently introduced tool like **competitive dialogue** is still limited and it has been used only in 4 countries for procuring ICT goods and services. We analyzed the tenders on “computer-

related services”, which is a good proxy for ICT,³³ published in the Official Journal after 1 November 2005 (as the first competitive dialogue tender was launched on 3 November, 2005).

Table 4: Countries where competitive dialogue has been used in procuring computer-related services, and relative usage.

Country	Total number of tenders on computer related services from 1-11-2005	...of which competitive dialogue	Percentage
DE	40	1	2,5%
DK	112	3	2,7%
FR	414	14	2,1%
GB	192	4	2,5%

Source: TED database consulted on 20 February 2006 (<http://ted.publications.eu.int/official/>)

One of the problems reported by experts with regard to competitive dialogue is the difficulty of overcoming suppliers’ reluctance to share sensitive information with other competitors.

With regard to SME involvement, experts in Member States point to existing soft measures such as training and awareness, and simplification programmes. In addition, the United Kingdom has adopted policies of reserving R&D procurement for SMEs similar to the US Small Business Innovation Research programme (SBIR) and the Netherlands is planning to do so. In defence procurement, France gives special treatment to high-tech SMEs: if they prove to be the originators of an innovative technology, SMEs can directly conclude an R&D contract with the Ministry of Defence without having to face competition with large companies (http://trendchart.cordis.lu/tc_datasheet.cfm?id=8658). In Norway, since 1968 the OFU and IFU programmes aim to stimulate innovative SMEs and improve the quality or cost efficiency of public services through the acquisition of new technologies or solutions by promoting to co-operation between a company and a public institution acting as customer. Here, the government supports the innovative purchase by the public authority financially (http://trendchart.cordis.lu/tc_datasheet.cfm?id=7484).

Finally, with regard to **barriers**, experts confirm the data presented in the previous chapter from a survey on green procurement. The main barriers are risk aversion in the public sector, focus on cost savings and delivering performance targets, lack of procurement and ICT skills in the public sector, and lack of policy priority for innovation.

To overcome these barriers, interviewed experts recognize the importance of a **European action** in this field. More awareness and information is needed to make the case for PTP, and also clarification of how new dispositions in procurement regulations can enable it. With regard to cross-border joint purchases, experts showed interest but emphasised the substantial effort that would be necessary to map possible areas of collaboration and appropriate tools.

³³ There are only 2 tenders with competitive dialogue in other product category related to ICT (one on telecom and one on broadcasting).

8. PRELIMINARY CONCLUSIONS

Because of the lack of existing data and its exploratory nature, this study cannot claim to have provided conclusive evidence. However it has clarified several important points which are worth considering in the policy-formulation process.

The public sector has the potential to positively influence innovation and R&D through public procurement. It provides a sufficient and stable demand for innovative products, thereby reducing the risks associated with innovation for suppliers. It also acts as the main or first user of new products or services. Thus, public procurement can be most influential in the early stages of the life-cycle of a product, promoting emerging industries.

As public procurement of products and services represents more than 16% of GDP in the EU15, it has significant economic leverage. In the field of ICT specifically, public expenditure is significant in both relative (about 20% of the IT market) and absolute terms (around €60 billion in 2004³⁴), and it is expected to grow as a result of current political objectives to increase efficiency and quality of public services, and the greater demand forecasted for several application areas such as eGovernment, health and education, transport/utilities and traffic safety.

Research shows that there is no comparative data available on how much of these ICT purchases are innovative. However, desk research and interviews with experts provides indications that can be used to provide a (partial) assessment of the situation.

A World Economic Forum survey (2002) shows Asian countries and the US ahead of Europe in the innovation orientation of public procurement. Countries such as the US and Korea have more explicit policies to orientate public demand towards promoting innovation.

Interviewed national experts unanimously consider the size of PTP as **marginal** in total public procurement. The main purpose of ICT procurement in the public sector is currently the maintenance of the existing products and services. Where innovative products are procured, they are often improvements and adaptations of existing products, and require little research effort. There are countries and sectoral niches which are more innovative, but it can be concluded that public procurement is not really realising its innovation potential.

The European Commission has devoted increasing attention to the possibility of stimulating innovation through public procurement, within the limits of the international dispositions of the Government Procurement Agreement within the WTO. In 2004, the **new procurement Directives** (2004/17 and 2004/18) introduced special provisions which could facilitate innovation, such as the possibility to use competitive dialogue and functional specification in the procurement process. In 2006, a handbook on PTP will be published.

At the national level, while procurement is undergoing an important modernisation across Europe, very **few European countries** (e.g. the UK, and the Netherlands) have specific programmes or focus on the use of public procurement for the promotion of innovation. In these countries, one can observe interesting policies such as the co-ordination between procurement and innovation policies, and the stimulation of integration in sectors such as health-care and education.

These policies generally aim to **raise awareness** of the opportunities brought by PTP. They deploy soft measures such as awareness raising, training in ICT and procurement skills, and exchange of good practice. As the implementation of policies is recent, there are, as yet, no measurable results nor can concrete examples of purchases stimulated by these policies be provided. Targets, however, are now being set (% of public procurement to be focused on products and services not available on the market). Experts report that greater awareness and communication is still needed even in those countries where specific procurement policies

³⁴ Source: EITO (2004)

exist, particularly as regards the means by which new dispositions in procurement regulation could enable innovation.

In spite of increasing **aggregation** and co-ordination among actors through, for example, public procurement agencies, these trends focus mainly on ICT commodity goods and services where joint procurement and economies of scale are easier to achieve. Procurement remains, thus, **very fragmented**, not only at national level within and among different institutions and sectors (administration, health, education, defence, etc) but also at regional and local level, where a significant share of procurement is carried out. Aggregation at EU level, although perceived as an opportunity for innovation, remains limited to EU initiatives such as Galileo or GEANT.

E-government and **e-procurement** initiatives appear to be instrumental for improving ICT procurement, by harmonising purchases, launching co-ordination initiatives, setting standards and building skills. However, the main focus of e-procurement is to produce cost savings. It targets “commodity” goods and services, and therefore does not stimulate the purchase of innovative goods and services.

Dialogue with the suppliers is fundamental to improve the quality and innovation of the purchases. Interaction with the ICT industry is established across Europe, and new instruments such as **competitive dialogue** have just been transposed in the Member States. However, while this instrument is still used to a limited degree, it is too early to assess its impact on innovation and research.

In identifying possible policy initiatives, the analysis of the **factors** that influence PTP is useful:

- The explicit co-ordination between procurement and innovation policies and actors;
- The dialogue between buyer and supplier at different stages of the procurement process;
- The aggregation of demand to provide a critical mass to justify private investment in R&D;
- Incorporating Life Cost Assessment in the evaluation of proposals;
- The buyer’s skills on ICT public procurement;
- Ensuring participation of Small and Medium Size companies (SMEs) which play a key role on product/service innovation;
- Risk sharing between suppliers and purchaser through contractual provisions; and
- Allowing Intellectual Property Rights (IPR) to remain at the supplier.

Specific barriers for PTP identified by the public sector are: lack of awareness of the legal dispositions for innovative procurement, lack of political commitment, and risk aversion in the public sector.

Finally, during the research, a **potential parallel has been identified with the green procurement** policy objectives and processes that have taken place at the EU and national level, including regulation, communications, awareness building and “learning/training by doing” actions such as the green procurement handbook. As this is a more mature policy area, learning from practices in this area could provide useful insights for PTP.

In summary two main observations have to be made:

- The policy relevance of public procurement in promoting innovation and R&D has been recognized by the European Commission and most of the EU Member States. The policy dialogue has been intensified, but we are at the early phases of the warm-up process. This is the main reason for the lack of statistical data, and the very few policy actions and experiences.
- While most public procurement usually targets off-the-shelf products and services without requesting any additional R&D, in the future accelerated technical change and the growing social demand for improved quality in public services will result in more

and more public purchasing demands. This will invite additional R&D efforts by the suppliers. In such cases “the best value for money” will largely be determined by the extent to which really new innovations become part of the process. This expectation strengthens further the importance of public procurement as a demand side innovation measure.

Existing evidence is not sufficient to provide a conclusive picture of the role of public procurement in promoting innovation and ICT R&D. In particular, the analysis of the examples of innovative procurement practices suggested by the experts shows that these actually represent adaptations or improvements of existing solutions (incremental innovation) or even non technological innovation characterised by organisational and management changes, rather than early stage innovation of emerging technologies. Within the limited scope of this research, it has not been possible to identify the degree of R&D involved in these cases. Therefore, in terms of research recommendations, an analysis of selected case studies where public procurement has stimulated innovation and R&D is necessary, in order to validate the preliminary conclusions developed in this study.

ANNEX 1

QUESTIONNAIRE FOR INTERVIEWS WITH INDUSTRIAL REPRESENTATIVES OF THE EUROPEAN TECHNOLOGY PLATFORMS

1. Promising opportunities for early take-up of innovative applications and the technologies developed by the ETP for the use of the public sector (20 min)

- Options for technology breakthrough and for innovative applications development most relevant for the public sector.
- Targeted sectors for early take-up: identifying the application areas and government sectors (like defence, health, security, utilities – electricity, energy, water, communication etc., environment etc.), where the technologies developed by the ETP can open new markets or change significantly existing ones.
- Forecasting the size/growth of related market at European level (fast growing markets for PTP are wanted!)
- Options and necessities for cross-country approaches in PTP in related ICT areas (Why? – risk sharing, standardisation, first buyer etc.; How to do it?)

2. Opinion on European PTP practice and regulation in ICT (20 min)

- Do you have experience of significant competitive differences across countries in Europe and its global competitors (USA, Japan, China, India, Korea etc.) in the way ICT public procurement is carried out?
- Do you consider that PTP in ICT is sufficiently recognised as a priority to stimulate research and innovation in Europe?
- What do you see as the main drivers and benefits of using PTP in ICT?
- What are the perceived risks and barriers preventing from doing more PTP in ICT?
- Do you think that PP practices and regulation are appropriate for PTP of ICT? And why?
 - What do you think should be done to improve these practices and regulation?
 - What would you recommend to be done to stimulate ‘more’ PTP in ICT?
- How do you see the role of Europe in this domain? (What are the areas where there is a clear European added value? How could it be organised?)
- Do you have plans in the ETP to explore and stimulate public procurement of early developed technologies and applications? If so, can you elaborate on them and on what will be your main priorities?

ANNEX 2

QUESTIONNAIRE FOR INTERVIEWS WITH MEMBER STATES' EXPERTS ON PUBLIC PROCUREMENT

1. General background of national public procurement activities in ICT

- Facts on the market:
 - What is the size of public procurement in ICT (in EURO)?
 - What is the share of ICT public procurement in total public procurement (in %)?
 - What are the main areas of public ICT public procurement?
 - How much do central, regional and local administrations spend for ICT through public procurement?
- Regulative framework and operation of public procurement for ICT (How is public procurement for ICT organised in your country?)
 - Who manages the purchases of different sectors, such as hospitals and health, police and security, public transport etc.? Are they aggregated and at which level?
 - Is there a programme for demand aggregation? What are the main features?
 - Are there special regulations or provisions for ICT procurement?
- Specific questions:
 - Are there special provisions for SMEs?
 - Are there any special provisions for procurement, for example for environmental and social goals?
 - How much ICT does the respondent's agency procure?

2. PTP in ICT

- Facts on the market:
 - What is the share of PTP as % of total public procurement in the fields of ICT?
- Regulative framework and operation of PTP for ICT:
 - Is PTP considered as a priority at national level? (Does a special framework or regulation exist for innovative procurement? If so, can you describe its main features? What approaches have been adopted to support and stimulate PTP in ICT?)
 - What measures are put in place to encourage risk taking, risk sharing and risk management within the public sector?
 - How are monitored the market trends in ICT? (How are they used?)
 - How is the technical dialogue used?
 - What sectors are the most relevant for PTP of ICT and why (size, priorities...)?

- Are there special central, regional or local structures to support ICT PTP?
- Specific questions:
 - Can you mention any example of ICT PTP you carried out? If yes, what were the main differences with respect to traditional procurement? If none, what is the most innovative purchase you have carried out?

3. Opinions

- Do you consider that PTP in ICT is sufficiently recognised as a priority to stimulate research and innovation in your country?
- What do you see the main benefits and drivers of using PTP in ICT?
- What are the perceived risks and barriers preventing from doing more PTP in ICT?
- Future opportunities: more or less PTP?
- What do you think are the ‘best’ sectors for doing more PTP of ICT?
- What would you recommend to be done to stimulate ‘more’ PTP in ICT?
- How do you see the role of Europe in this domain?
 - What are the areas where there is a clear European added value?
 - How could it be organised?

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Abstract

This report discusses the findings of a study carried out by JRC-IPTS which aimed to assess the status of public technology procurement in the EU member states in terms of size, evolution, drivers and barriers. As the study was exploratory, it cannot be claimed that the results are conclusive. However, they have clarified several important points which are worth considering in the policy-formulation process.

The public sector has the potential to positively influence innovation and R&D through public procurement. It provides a sufficient and stable demand for innovative products, thereby reducing the risks associated with innovation for suppliers. It also acts as the main or first user of new products or services. Thus, public procurement can be most influential in the early stages of the life-cycle of a product, promoting emerging industries.

The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.

